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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,872	12/13/2004	Catherine Julia Piper	PPD 70048	1343
86344 7590 07/07/2009 Syngenta Crop Protection, Inc., Patent and Trademark Department 410 Swing Road Greensboro, NC 27409			EXAMINER CHUI, MEI PING	
			ART UNIT 1616	PAPER NUMBER
			MAIL DATE 07/07/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/517,872

**Applicant(s)**

PIPER ET AL.

**Examiner**

MEI-PING CHUI

**Art Unit**

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 8-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CIS)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/10/2009 has been entered.

***Status of Action***

Receipt of Amendments/Remarks filed on 04/10/2009 is acknowledged. Claims 1-6, 8-14 are pending in this application. Claims 1-6, 8-10, 12 are previously presented; claim 11 has been amended; claim 7 was previously cancelled; new claims 13-14 are added in this application.

***Status of Claims***

Accordingly, claims **1-6, 8-14** are presented for examination on the merits for patentability.

Rejections and/or objections not reiterated from the previous Office Action are hereby withdrawn. The following rejection(s) is/are either reiterated or newly applied. They constitute the complete set of rejections and/or objections presently being applied to the instant application.

***Claim Rejection - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

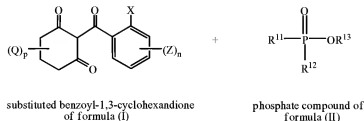
**(1) Claims 1-6, 8, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pallett et al. (WO 02/21919) in view of Johnson, R. R. (U. S. Patent No. 4,776,882).**

***Applicants claim***

Applicants claim a herbicidal composition comprising (i) a metal-chelated of a 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide of formula (I) and (ii) an organic adjuvant, i.e. a phosphate, phosphonate or phosphinate compound of formula (II). Applicants also claim a method for controlling at least one weed, or improving the selectivity of said metal-chelated of 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide of formula (I) to unwanted vegetation in a crop of useful plants, by applying the

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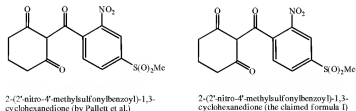
herbicidal composition set forth above to a locus, i.e. soil, seed, seedling or established vegetation:



***Determination of the scope and content of the prior art  
(MPEP 2141.01)***

Pallett et al. teach a herbicidal composition comprising a herbicide 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione or its metal complex (page 6, line 5) **and** conventional adjuvants, i.e. penetrating agents, if desired, wherein the adjuvants can also serve as carriers (page 7, lines 8-11).

More specifically, Pallett et al. teach the herbicide 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione, which has a chemical structure represents identical to the instantly claimed 2-(substituted benzoyl)-1, 3-cyclohexanedione of formula (I), wherein the substituent X = NO<sub>2</sub>; Z = S(O)<sub>2</sub>CH<sub>3</sub>; p = 0 and n = 1 (see page 2 at the top, the chemical structure of the formula (II)):



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Pallett et al. also teach a method for controlling the growth of weeds in crops-growing areas by applying to the locus of weeds an effective amount of herbicidal composition, which comprises a benzoyl cyclohexanedione compound of formula (II), i.e. 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione or its metal complex (page 2, lines 1-2 and the compound of formula (II); page 4, lines 3-5). Pallett et al. then teach that the herbicidal composition can be used for selectively control the growth of weeds to a locus of weed infestation which is an area used for growing crops, wherein said method can be used to control a very wide spectrum of broad-leafed weeds and grass weeds, i.e. Amaranthus, Chenopodium, Sida, Veronica, Xanthium, Setaria, Sorghum, Echinochola, Digitaria (page 3, line 24-28; page 11, lines 1-5), and wherein the locus of weeds can be the soil surface or the seed of various weed species (page 10-11, Example 1-2).

*Ascertainment of the difference between the prior art and the claims*

*(MPEP 2141.02)*

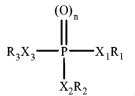
Pallett et al. do not exemplify the conventional adjuvant (a penetrating agent) set forth above is an organic phosphate compound of formula (II), as instantly claimed. However, the deficiency is cured by the teaching of Johnson, R. R.

Johnson, R. R. teaches a composition comprising a **penetrant-carrier, which is used in combination with a biocide, i.e. herbicide**, to control or regulate the growth of undesired woody plants (column 1, line 66 through column 2, line 5). Johnson, R. R. teaches that the penetrant-carrier is effective in eliminating the necessity of transporting large volumes of expensive fuel oil to the use site, and **when use with herbicides of limited soil activity, the penetrant-carrier can also help eliminating or reducing**

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**potential injury to off-target vegetation** (column 1, lines 50-63). Therefore, Johnson, R. R. implicitly suggests that the penetrant-carrier can help the susceptibility or tolerance of the off-target plants (which is the useful plants or crops) to the herbicide; thus, it meets the claimed method for "improving the selectivity of a metal-chelated of 2-(substituted benzoyl)-1, 3-cyclohexanedione of formula (I), as claimed in claim 12.

Johnson, R. R. then teaches that the penetrant-carriers can be a phosphorus compound having the formula represented by the chemical formula:



wherein  $\text{X}_1$ ,  $\text{X}_2$  and  $\text{X}_3$  can be oxygen;  $n = 1$ ;  $\text{R}_1$ ,  $\text{R}_2$ , and  $\text{R}_3$  can be  $\text{C}_1$ - $\text{C}_{10}$  alkyl groups (column 2, lines 13-29). Preferably, the penetrant-carriers are trialkylphosphates, i.e. tributylphosphate and tri(2-ethylhexyl)phosphate (column 2, lines 50-65).

***Finding of prima facie obviousness Rational and Motivation***  
***(MPEP 2142-2143)***

It would have been obvious to a person of ordinary skilled in the art at the time the invention was made to combine the teaching of Pallett et al. and Johnson, R. R. to arrive at the instant invention.

One of ordinary skill would have been motivated to incorporate a penetrating agent, i.e. a phosphate compound of formula as taught by Johnson, R. R., into a herbicidal composition containing a metal-complex of 2-(substituted benzoyl)-1, 3-cyclohexanedione herbicide, i.e. a metal complex of 2-(2'-nitro-4'-

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methylsulfonylbenzoyl)-1, 3-cyclohexanedione herbicide, in order to widen the spectrum of weeds control and improve herbicidal selectivity to the off-target vegetation, as suggested by Pallett et al. and Johnson, R. R.

From the teaching of the references, one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

**(2) Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pallett et al. (WO 02/21919) in view of Johnson, R. R. (U. S. Patent No. 4,776,882), and further in view of Goyette, L. E. (U. S. Patent No. 2,927,014).**

#### *Applicants Claim*

Applicants claim a herbicidal composition comprising (i) a metal-chelated of 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide of formula (I) and (ii) an organic adjuvant, i.e. a phosphonate or phosphinate compound of formula (II).

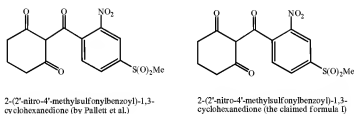
#### ***Determination of the scope and content of the prior art (MPEP 2141.01)***

The teachings of Pallett et al. and Johnson, R. R. have been set forth above. Pallett et al. teach a herbicidal composition comprising the herbicide 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione or its metal complex (page 6, line 5) and conventional adjuvants, i.e. penetrating agents, if desired, wherein the adjuvants can also serve as carriers (page 7, lines 8-11).



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More specifically, Pallett et al. teach the herbicide 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione, which has a chemical structure represents identical to the instantly claimed 2-(substituted benzoyl)-1, 3-cyclohexanedione of formula (I), wherein the substituent  $X = \text{NO}_2$ ;  $Z = \text{S}(\text{O})_2\text{CH}_3$ ;  $p = 0$  and  $n = 1$  (see page 2 at the top, the chemical structure of the formula (II)):

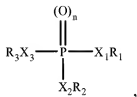


Pallett et al. also teach a method for controlling the growth of weeds in crops-growing areas by applying to the locus of weeds an effective amount of herbicidal composition, which comprises a benzoyl cyclohexanedione compound of formula (II), i.e. 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione or its metal complex (page 2, lines 1-2 and the compound of formula (II); page 4, lines 3-5). Pallett et al. then teach that the herbicidal composition can be used for selectively control the growth of weeds to a locus of weed infestation which is an area used for growing crops, wherein said method can be used to control a very wide spectrum of broad-leaved weeds and grass weeds (page 3, line 24-28; page 11, lines 1-5).

Johnson, R. R. teaches a composition comprising a penetrant-carrier, which is used in combination with a biocide, i.e. herbicide, to control or regulate the growth of undesired woody plants (column 1, line 66 through column 2, line 5). Johnson, R. R. teaches that the penetrant-carrier is effective in eliminating the necessity of transporting large volumes of expensive fuel oil to the use site, and when use with herbicides of

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limited soil activity, the penetrant-carrier can also help eliminating or reducing potential injury to off-target vegetation (column 1, lines 50-63). Johnson, R. R. then teaches that the penetrant-carriers can be a phosphorus compound having the formula represented by the chemical formula:



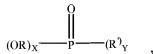
wherein  $\text{X}_1$ ,  $\text{X}_2$  and  $\text{X}_3$  can be oxygen;  $n = 1$ ;  $\text{R}_1$ ,  $\text{R}_2$ , and  $\text{R}_3$  can be  $\text{C}_1$ - $\text{C}_{10}$  alkyl groups (column 2, lines 13-29). Preferably, the penetrant-carriers are trialkylphosphates, i.e. tributylphosphate and tri(2-ethylhexyl)phosphate (column 2, lines 50-65).

*Ascertainment of the difference between the prior art and the claims*

*(MPEP 2141.02)*

The combined teaching of Pallett et al. and Johnson, R. R. does not teach other phosphorus compounds, i.e. phosphonate or phosphinate compounds, for weeds control purpose. However, the deficiency is cured by the teaching of Goyette, L. E.

Goyette, L. E. teaches a method of applying phosphorus compounds, as represented by the general formula below, for controlling the growth of undesirable plants (column 1, lines 15-16; column 2, lines 39-40):



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wherein the substituents R and R' of the formula set forth above represent an alkyl or substituted aryl group, in which if the compound is a phosphonate, then X = 2 and Y = 1, or if the compound is a phosphinate, then X = 1 and Y = 2 (column 2, lines 41-53).

More specifically, Goyette, L. E. teaches that the phosphonate compound is dialkyl alkylphosphonate, i.e. the one where the R-groups are 2-ethylhexyl and R' group is an ethyl group (Table II, compound No. 9), and the phosphinate where the R group is an ethyl group and R' groups are 2-ethylhexyl (Table III: compound 27).

Goyette, L. E. also teaches that both the phosphonate and the phosphinate compounds possess herbicidal activity for killing germinating seeds, seedlings and plants (column 2, lines 54-60 and column 3, lines 1-3).

***Finding of prima facie obviousness Rational and Motivation***  
***(MPEP 2142-2143)***

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Pallett et al. and Johnson, R. R. with Goyette, L. E. to arrive at the instant invention.

One of ordinary skill would have been motivated to substitute the phosphate penetrating agent with other phosphorus compounds that are also suitable for use in herbicidal composition, i.e. the phosphonate and the phosphinate compounds taught by Goyette, L. E., because the phosphate compounds taught by Johnson, R. R. and the phosphonate compound (or the phosphinate compound) taught by Goyette, L. E. are structural equivalent phosphorus compounds, and thus, can be used interchangeably.

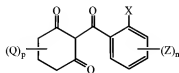
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From the teaching of the references, one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

**(3) Claims 1-6, 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scher et al. (U. S. Patent No. 5,912,207) in view of Johnson, R. R. (U. S. Patent No. 4,776,882) and Goyette, L. E. (U. S. Patent No. 2,927,014) combined.**

*Applicants claim*

Applicants claim a herbicidal composition comprising: (i) a metal-chelated of 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide of formula (I) and (ii) an organic adjuvant, i.e. a phosphate, phosphonate or phosphinate compound of formula (II). Applicants also claim a method for controlling at least one weed, or improving the selectivity of said metal-chelated 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide of formula (I) to unwanted vegetation in a crop of useful plants, by applying the herbicidal composition set forth above to a locus, i.e. soil, seed, seedling or established vegetation:



substituted benzoyl-1,3-cyclohexanedione  
of formula (I)

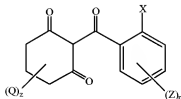
+



phosphate compound of  
formula (II)

***Determination of the scope and content of the prior art***  
***(MPEP 2141.01)***

Scher et al. teach a method for using a composition, which contains metal chelated of 2-(substituted-benzoyl)-1, 3-cyclohexanedione herbicides to selectivity control weeds and other undesirable vegetation in a given useful crops. The composition comprises a **metal-chelated 2-(substituted benzoyl)-1, 3-cyclohexanedione herbicide**, wherein the metal ions of the herbicides are provided from metal salt of phosphate (column 1, lines 3-5; column 7, line 57). Scher et al. also teach that the phosphate salt compound is particularly suitable as a source to provide a divalent or trivalent metal ion for forming the metal chelating with 2-(substituted-benzoyl)-1, 3-cyclohexanedione compound (column 7, line 53-57). In particular, the copper-chelated 2-(substituted benzoyl)-1, 3-cyclohexanedione herbicide shows improved selectivity over the unchelated formulation. Scher et al. then teach that the chemical structure of the 2-(substituted-benzoyl)-1, 3-cyclohexanedione of formula (II) is represented as below:



wherein X: represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups  $-OR^{15}$  or one or more halogen atoms; or a group selected from nitro, cyano,  $-CO_2R^{16}$ ,  $-S(O)_mR^{15}$ ,  $-O(CH_2)_zOR^{15}$ ,  $-COR^{16}$ ,  $-NR^{16}R^{17}$ ,  $-SO_2NR^{16}R^{17}$ ,  $-CONR^{16}R^{17}$ , -

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CSNR<sup>16</sup>R<sup>17</sup> and -OSO<sub>2</sub>R<sup>18</sup> (for X: see column 4, line 21-28; for R<sup>15</sup>-R<sup>18</sup>: see column 4, line 28-38);

**Z:** each independently represents halo, nitro, cyano, S(O)<sub>m</sub>R<sup>16</sup>, OS(O)<sub>m</sub>R<sup>16</sup>, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)alkoxyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkoxyl, carboxyl, (C<sub>1</sub>-C<sub>6</sub>)alkylcarbonyloxy, (C<sub>1</sub>-C<sub>6</sub>)alkoxycarbonyl, (C<sub>1</sub>-C<sub>6</sub>)alkylcarbonyl, amino, (C<sub>1</sub>-C<sub>6</sub>)alkylamino, (C<sub>1</sub>-C<sub>6</sub>)dialkylamino having independently the stated number of carbon atoms in each alkyl group, (C<sub>1</sub>-C<sub>6</sub>)alkylcarbonylamino, (C<sub>1</sub>-C<sub>6</sub>)alkoxycarbonylamino, (C<sub>1</sub>-C<sub>6</sub>)alkylaminocarbonylamino, (C<sub>1</sub>-C<sub>6</sub>)dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, (C<sub>1</sub>-C<sub>6</sub>)alkoxycarbonyloxy, and the remaining substituents as recited therein (for Z: see column 4, line 39-54; for R<sup>7</sup>: see column 4, line 7-8, and for R<sup>8</sup>: see column 4, line 9-14); and R<sup>2</sup> represents cyano, -COR<sup>7</sup>, -CO<sub>2</sub>R<sup>7</sup> or -S(O)<sub>m</sub>R<sup>8</sup> (column 3, line 25);

**Q:** each independently, represents C<sub>1</sub>-C<sub>4</sub> alkyl or -CO<sub>2</sub>R<sup>a</sup> wherein R<sup>a</sup> is (C<sub>1</sub>-C<sub>4</sub>) alkyl (column 5, line 28-30 and column 5, line 29-30);

**z:** is 0 or an integer from 1 to 6 (column 5, line 30);

**m:** is 0, 1 or 2 (column 2, line 55);

**n:** is 0 or an integer from 1 to 4 (column 2, line 56);

**r:** is 1, 2 or 3 (column 2, line 59).

It is noted that the substituents of the metal-chelate herbicide formula (I) taught by Scher et al. and the substituents of the instantly claimed 2-(substituted-benzoyl)-1, 3-cyclohexanedione formula (II) represent as follows

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<u>Substituent (Scher et al.)</u>	<u>Substituent (instant claims)</u>
R <sup>2</sup>	R <sup>5</sup>
R <sup>7</sup>	R <sup>6</sup>
R <sup>8</sup>	R <sup>7</sup>
(C <sub>1</sub> -C <sub>4</sub> ) alkyl	R <sup>8</sup>
R <sup>15</sup>	R <sup>1</sup>
R <sup>16</sup>	R <sup>2</sup>
R <sup>17</sup>	R <sup>3</sup>
R <sup>18</sup>	R <sup>4</sup>
R <sup>a</sup>	R <sup>9</sup>

Scher et al. also teach that the preferred 2-(substituted-benzoyl)-1, 3-cyclohexanedione compound of formula (II) comprises substituents, where the substituent X is chloro, bromo, nitro, cyano, C<sub>1</sub>-C<sub>4</sub> alkyl, -CF<sub>3</sub>, -S(O)<sub>m</sub>R<sup>15</sup> or -OR<sup>15</sup> (column 6, line 12-13).

Scher et al. further teach that the substituent Z is independently chloro, bromo, nitro, cyano, (C<sub>1</sub>-C<sub>4</sub>) alkyl, -CF<sub>3</sub>, -OR<sup>15</sup>, -OS(O)<sub>m</sub>R<sup>2</sup> or S(O)<sub>m</sub>R<sup>2</sup> for the preferred 2-(substituted benzoyl)-1,3-cyclohexanedione compound of formula (II) (column 6, line 14-16) and n is 1 or 2, and z is 0 (column 6, line 12 and 14).

In addition, Scher et al. teach that the preferred cyclohexanedione compounds are 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1, 3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxy-benzoyl)-1, 3-cyclohexanedione and 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1, 3-cyclohexane-dione (column 6, line 16-20).

Scher et al. teach that the herbicidal formulation, which contains the metal-chelate cyclohexanedione compound of formula (I), can be applied directly to an area where

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control of undesired vegetation is located, wherein the area or locus includes soil, seed and established vegetation, and wherein the undesired vegetation species can be Galium and Chenopodium (column 8, line 28-31; page 6, lines 29-31; page 7, lines 26-30).

*Ascertainment of the difference between the prior art and the claims*

*(MPEP 2141.02)*

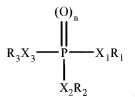
Scher et al. do not teach the use of phosphate, phosphonate or phosphinate compounds as adjuvants in the herbicidal composition. However, the deficiency is cured by the teachings of Johnson, R. R. and Goyette, L. E. in combination

Johnson, R. R. teaches a composition comprising a **penetrant-carrier, which is used in combination with a biocide, i.e. herbicide**, to control or regulate the growth of undesired woody plants (column 1, line 66 through column 2, line 5). Johnson, R. R. teaches that the penetrant-carrier is effective in eliminating the necessity of transporting large volumes of expensive fuel oil to the use site, and **when use with herbicides of limited soil activity, the penetrant-carrier can also help eliminating or reducing potential injury to off-target vegetation** (column 1, lines 50-63). Therefore, Johnson, R. R. implicitly suggests that the penetrant-carrier can help the susceptibility or tolerance of the off-target plants (which is the useful plants or crops) to the herbicide; thus, it meets the claimed method for "improving the selectivity of a metal-chelate of 2-(substituted benzoyl)-1, 3-cyclohexanedione of formula (I), as claimed in claim 12.

Johnson, R. R. then teaches that the penetrant-carriers can be a phosphorus compound having the formula represented by the chemical formula:

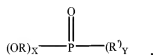


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wherein  $\text{X}_1$ ,  $\text{X}_2$  and  $\text{X}_3$  can be oxygen;  $n = 1$ ;  $\text{R}_1$ ,  $\text{R}_2$ , and  $\text{R}_3$  can be  $\text{C}_1$ - $\text{C}_{10}$  alkyl groups (column 2, lines 13-29). Preferably, the penetrant-carriers are trialkylphosphates, i.e. tributylphosphate and tri(2-ethylhexyl)phosphate (column 2, lines 50-65).

Goyette, L. E. teaches a method of applying phosphorus compounds, as represented by the general formula below, for controlling the growth of undesirable plants (column 1, lines 15-16; column 2, lines 39-40):



wherein the substituents  $\text{R}$  and  $\text{R}'$  of the formula set forth above represent an alkyl or substituted aryl group, in which if the compound is a phosphonate, then  $X = 2$  and  $Y = 1$ , or if the compound is a phosphinate, then  $X = 1$  and  $Y = 2$  (column 2, lines 41-53).

More specifically, Goyette, L. E. teaches that the phosphonate compound is dialkyl alkylphosphonate, i.e. the one where the  $\text{R}$ -groups are 2-ethylhexyl and  $\text{R}'$  group is an ethyl group (Table II compound No. 9), and the phosphinate where the  $\text{R}$  group is an ethyl group and  $\text{R}'$  groups are 2-ethylhexyl (Table III: compound 27).

Goyette, L. E. also teaches that both the phosphonate and the phosphinate compounds possess herbicidal activity for killing germinating seeds, seedlings and plants (column 2, lines 54-60 and column 3, lines 1-3).

***Finding of prima facie obviousness Rational and Motivation***

***(MPEP 2142-2143)***

It would have been obvious to a person of ordinary skilled in the art at the time the invention was made to combine the teaching of Scher et al. with Johnson, R. R. and Goyette, L. E. to arrive at the instant invention.

One of ordinary skill would have been motivated to incorporate a penetrating agent, i.e. a phosphate compound of formula into a herbicidal composition containing a 2-(substituted benzoyl)-1,3-cyclohexanedione herbicide, i.e. a metal complex of 2-(2'-nitro-4'-methylsulfonylbenzoyl)-1, 3-cyclohexanedione herbicide, in order to widen the spectrum of weeds control and improve herbicidal selectivity to the off-target vegetation, as suggested by Johnson, R. R.

One of ordinary skill also would have been motivated to substitute the phosphate penetrating agent taught by Johnson, R. R. with other phosphorus compounds that are also suitable for use in herbicidal composition, i.e. the phosphonate and the phosphinate compounds taught by Goyette, L. E., because the phosphate compounds and the phosphonate compounds (or the phosphinate compounds) are structural equivalent phosphorus compounds, and thus, can be used interchangeably.

From the teaching of the references, one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

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***Conclusion***

No claims are allowed.

***Contact Information***

Any inquiry concerning this communication from the Examiner should direct to Helen Mei-Ping Chui whose telephone number is 571-272-9078. The examiner can normally be reached on Monday-Thursday (7:30 am – 5:00 pm). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where the application or proceeding is assigned is 571-273-8300.

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/H. C./

Examiner, Art Unit 1616

/Johann R. Richter/

Supervisory Patent Examiner, Art Unit 1616

